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10/663,378	09/17/2003	Steven A. Rogers	006389.00002	2690

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EXAMINER	
MERED, HABTE	
ART UNIT	**PAPER NUMBER**
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/663,378	ROGERS, STEVEN A.	
	Examiner	Art Unit	
	Habte Mered	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 11-25-03 5/24/06 9-14-05 2/29/07
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to communication filed on 9/17/2003.

2. Claims 1-20 are pending in the instant Application. Claims 1, 15, and 19 are the base independent claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

(I) Claims 1, 5, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du et al (Yi Du, Gerald M. Mason, "Enhancing Accuracy of Probe Packet-based Congestion Detection in High Speed Networks", IEEE, 1998), hereinafter referred to as Du in view of Vukovic et al (US Pub. No. 2004/0160916 A1), hereinafter referred to as Vukovic.

Du teaches a technique to detect and control congestion in high-speed networks using probe/test packets.

1. Regarding **claim 1**, Du discloses a method of transmitting packets over a network **(See Figure 1)**, comprising the steps of: (1) transmitting a plurality of test packets over the network during a plurality of different time slots;**(See Page 258, Section 2, 1st Column, 1st paragraph and 2nd Column, Lines 1-7. Please also note that in Du's testing arrangement according to the terminology shown in Figure 2, Du refers to testing packets as probe packets and to time slots as**

Communication Interval (I). Further Du shows the testing is done over a plurality of time slots (i.e. Communication Interval, I,) as further evidenced in Figure 4. See also page 259 2nd Column Lines 8-10 and 13-19)

(2) on the basis of step (1), evaluating which of the plurality of different time slots corresponds to favorable network traffic conditions; **(In Figure 6 Du shows all probability of congestion detection is done per time slot (i.e. communication Interval, I) indicating favorable time slot. Further Figures 4 and 7 show test packets are sent per time slot (i.e. communication interval, I) and the evaluation is done per time slot.)**

Du, however fails to disclose the third step of transmitting data packets over the network using one or more favorable time slots evaluated in step (2).

Vukovic teaches a method of determining an optimal time slot to transmit data based on an evaluation made based on network traffic conditions.

Vukovic discloses the third step of transmitting data packets over the network using one or more favorable time slots evaluated in step (2). **(See Figure 10, step 421 and Paragraph 51 and 10. See also Figures 13 and 14)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Du's method by incorporating the third step of transmitting data packets over the network using one or more favorable time slots evaluated in step (2). The motivation to choose a time slot or time position that is favorable to network traffic conditions is to minimize co-channel interference as stated in paragraph 22 by Vukovic.

2. Regarding **claim 5**, Du discloses a method, wherein step (1) comprises the step of transmitting the test packets at a data rate corresponding to an expected connection bandwidth. **(See Page 258. Section 2, 1st Column, 1st paragraph and 2nd Column, Lines 1-7.)**

3. Regarding **claim 12**, the combination of Du and Vukovic discloses a method, further comprising the step of repeating steps (1) through (3) for each side of a two-way connection between two nodes in the network. **(See Du's Figure 1 and Vukovic's Figure 5)**

4. Regarding **claim 13**, the combination of Du and Vukovic discloses a method of, wherein the network is a packet-switched network comprising packet switches that maintain packet queues. **(See Vukovic's Figure 5, elements 270, 273, and 271 also Du's Figure 1 and Section 2, page 258, last 3 lines of Column 1)**

(II) Claims 2, 10, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du in view of Vukovic as applied to claim 1 above, and further in view of Tezuka et al (US Pub. No. 2003/0107991), hereinafter referred to as Tezuka.

Tezuka teaches congestion control system for VOIP network.

1. Regarding **claim 2**, the combination of Du and Vukovic fails to teach a method of, wherein step (1) comprises the step of transmitting the plurality of test packets using a lower priority level than is used to transmit data packets in step (3).

Tezuka discloses a method of, wherein step (1) comprises the step of transmitting the plurality of test packets using a lower priority level than is used to transmit data packets in step (3). **(See Paragraph 19)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein step (1) comprises the step of transmitting the plurality of test packets using a lower priority level than is used to transmit data packets in step (3). The motivation for changing the priority level of the test packets to a lower priority is to minimize disruption of user data packets transmitted at a higher priority as suggested by Tezuka in Paragraphs 19 and 20.

2. Regarding **claim 10**, the combination of Du and Vukovic fails to teach a method, wherein the test packets are transmitted at a priority level that is lower than the data packets in step (3), but higher than other data packets containing other data transmitted on the network.

Tezuka discloses a method, wherein the test packets are transmitted at a priority level that is lower than the data packets in step (3), but higher than other data packets containing other data transmitted on the network. **(See Figure 19 and Paragraphs 159, 160, 162 and 167)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein the test packets are transmitted at a priority level that is lower than the data packets in step (3), but higher than other data packets containing

other data transmitted on the network. The motivation for changing the priority level of the test packets to a lower priority than the data packets in step (3), but higher than other data packets containing other data transmitted on the network is to minimize disruption of user data packets transmitted at a higher priority as suggested by Tezuka in Paragraph 160.

3. Regarding **claim 14**, the combination of Du and Vukovic fails to teach a method, wherein each packet switch comprises at least two packet queues, a higher-priority queue for transmitting the data packets of step (3) and a lower-priority queue for transmitting the test packets of step (1).

Tezuka discloses a method, wherein each packet switch comprises at least two packet queues, a higher-priority queue for transmitting the data packets of step (3) and a lower-priority queue for transmitting the test packets of step (1). **(See Figure 20 and Figures 19a-c)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein each packet switch comprises at least two packet queues, a higher-priority queue for transmitting the data packets of step (3) and a lower-priority queue for transmitting the test packets of step (1). The motivation to have queues with different levels of priorities is to give the switch adequate flexibility during congestion such it allows it to lower the test packet priority so as not to interfere in normal high-speed user data transmission as stated by Tezuka in paragraph 19.

(III) Claims 3-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du in view of Vukovic as applied to claim 1 above, and further in view of Komatsu et al (US 6, 914, 900), hereinafter referred to as Komatsu.

Komatsu teaches evaluating voice quality along a route through an IP network.

1. Regarding **claim 3**, the combination of Du and Vukovic fails to teach a method, wherein step (2) comprises the step of evaluating packet latencies associated with the test packets.

Komatsu discloses a method, wherein step (2) comprises the step of evaluating packet latencies associated with the test packets. **(See Figure 6, step 409 and Figure 8B, step 523)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating the procedure wherein step (2) comprises the step of evaluating packet latencies associated with the test packets. The motivation to evaluate packet latencies is to evaluate the quality of acquired IP trunk before setting up a call as indicated by Komatsu in Figure 8B, step 524.

2. Regarding **claim 4**, the combination of Du and Vukovic fails to teach a method, wherein step (2) comprises the step of evaluating dropped packet rates associated with the test packets.

Komatsu discloses a method, wherein step (2) comprises the step of evaluating dropped packet rates associated with the test packets. **(See Figure 8J, step 591 and see Column 12:30-36)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein step (2) comprises the step of evaluating dropped packet rates associated with the test packets. The motivation to evaluate dropped packet rates per time slot is to determine voice quality data as shown in Column 12:30-36 by Komatsu.

3. Regarding **claim 6**, the combination of Du and Vukovic fails to teach a method, wherein step (2) comprises the step of a transmitting node performing an evaluation of latencies and dropped packet rates associated with the plurality of different time slots.

Komatsu discloses a method, wherein step (2) comprises the step of a transmitting node performing an evaluation of latencies and dropped packet rates associated with the plurality of different time slots. **(See Figure 8B, step 523, Figure 8J, step 591 and see Column 12:30-36)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein step (2) comprises the step of a transmitting node performing an evaluation of latencies and dropped packet rates associated with the plurality of different time slots. The motivation to evaluate latencies and dropped packet rates per time slot is to determine voice quality data as shown in Column 12:30-36 by Komatsu.

4. Regarding **claim 7**, the combination of Du and Vukovic fails to teach a method, wherein step (2) comprises the step of a receiving node performing an evaluation of latencies and dropped packet rates associated with the plurality of different time slots.

Komatsu discloses a method, wherein step (2) comprises the step of a receiving node performing an evaluation of latencies and dropped packet rates associated with the plurality of different time slots. **(See Figure 3, element 304 and Column 7;30-40)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein step (2) comprises the step of a receiving node performing an evaluation of latencies and dropped packet rates associated with the plurality of different time slots. The motivation to evaluate latencies and dropped packet rates per time slot is to determine voice quality data as shown in Column 12:30-36 by Komatsu.

5. Regarding **claim 8**, the combination of Du and Vukovic fails to teach a method, wherein the test packets and the data packets comprise IP packets over a packet-switched network.

Komatsu discloses a method, wherein the test packets and the data packets comprise IP packets over a packet-switched network. **(See Figures 5A, 5B and 6 and Column 8:30-52)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein the test packets and the data packets comprise IP

packets over a packet-switched network. The motivation to use test packets and data packets comprising IP packets is to determine voice quality on IP networks as indicated by Komatsu in Column 8:53.

6. Regarding **claim 9**, the combination of Du and Vukovic fails to teach a method, wherein the IP packets are scheduled for transmission within time slots within a frame that is synchronized to a clock.

Komatsu discloses a method wherein the IP packets are scheduled for transmission within time slots within a frame that is synchronized to a clock. **(See Column 3:20-27 – when the IP packet is routed over SONET frames then it is synchronized to a clock)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein the IP packets are scheduled for transmission within time slots within a frame that is synchronized to a clock. The motivation to schedule IP packets for transmission within time slots within a frame that is synchronized to a clock is to create an alternative path through a SONET/SDH network when the voice quality of the IP network is degraded as suggested in Komatsu in Column 3:20-27.

7. Regarding **claim 11**, the combination of Du and Vukovic fails to teach a method, wherein the data packets comprise voice data.

Komatsu discloses a method wherein the data packets comprise voice data. **(See Figure 1, elements 10, 24, 54, and 60)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's and Vukovic's method by incorporating a procedure wherein the data packets comprise voice data. The motivation to transmit data packets comprising voice data is to provide Voice Over IP services which is a cheaper version of telecommunication services as it uses the Internet as a backbone as opposed to the much expensive legacy systems such as PSTN.

(IV) Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du in view of Vukovic and Komatsu.

1. Regarding **claim 15**, Du discloses a network comprising a plurality of packet switches **(Figure 1 and the nodes are ATM switches as indicated Page 258. Section 2, 1st Column, 1st paragraph)**, a method of transmitting data packets, comprising the steps of:

(1) establishing a time reference frame comprising a plurality of time slots during which packets are to be transmitted across the network; **;(See Page 258, Section 2, 1st Column, 1st paragraph and 2nd Column, Lines 1-7. Please also note that in Du's testing arrangement according to the terminology shown in Figure 2, Du refers to testing packets as probe packets and to time slots as Communication Interval (I). Further Du shows the testing is done over a plurality of time slots (i.e. Communication Interval, I,) as further evidenced in Figure 4. See also page 259 2nd Column Lines 8-10 and 13-19)**

(2) from a transmitting node, empirically determining which of the plurality of time slots is associated with a reduced rate of packet congestion with respect to an intended recipient node; **(In Figure 6 Du shows all probability of congestion detection is done per time slot (i.e. communication Interval, I) indicating favorable time slot. Further Figures 4 and 7 show test packets are sent per time slot (i.e. communication interval, I) and the evaluation is done per time slot.)**

Du fails to teach a method the third step of transmitting a plurality of data packets from the transmitting node to the intended recipient node during one or more time slots empirically determined to be associated with the reduced rate of packet congestion in step (2).

Vukovic discloses a method the third step of transmitting a plurality of data packets from the transmitting node to the intended recipient node during one or more time slots empirically determined to be associated with the reduced rate of packet congestion in step (2). **(See Figure 10, step 421 and Paragraph 51 and 10. See also Figures 13 and 14)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Du's method by incorporating the third step of transmitting data packets from the transmitting node to the intended recipient node during one or more time slots empirically determined to be associated with the reduced rate of packet congestion in step (2). The motivation to choose a time slot or time position that is associated with the reduced rate of packet congestion in step (2) is to minimize co-channel interference as stated in paragraph 22 by Vukovic.

Du fails to disclose the network is an IP network.

Komatsu discloses an IP network where voice quality of service is empirically determined on a time period basis. **(See Figures 1, 2, and 3 and Column 4:5-20)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Du's method by incorporating an IP network where voice quality of service is empirically determined on a time period basis. The motivation to incorporate an IP network is due to the fact that an IP network offers best traffic service and uses the network band to the fullest extent possible and costs less than legacy telecom systems and the motivation to determine a better quality of service comes from the fact that IP networks suffer low QoS from congestion and greatly benefit from any QoS upgrade as stated by Komatsu in Column 1:57-67.

2. Regarding **claim 16**, the combination of Du , Vukovic, and Komatsu discloses a method wherein step (2) comprises the step of transmitting a plurality of test packets during a plurality of different time slots from the transmitting node to the intended recipient node. **(Du's Figures 4 and 7 show test packets are sent per time slot (i.e. communication interval, I) and the evaluation is done per time slot. See also Vukovic's Figure 10, step 421 and Paragraph 51 and 10. See also Figures 13 and 14)**

(V) Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over DU in view of Vukovic and Komatsu as applied to claim 16 above, and further in view of Tezuka.

1. Regarding **claim 17**, the combination of Du, Komatsu, and Vukovic fails to teach a method, wherein step (2) comprises the step of transmitting the test packets using a packet priority level lower than a packet priority used to transmit data packets in step (3).

Tezuka discloses a method, wherein step (2) comprises the step of transmitting the test packets using a packet priority level lower than a packet priority used to transmit data packets in step (3). **(See Paragraph 19)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Du's, Komatsu's and Vukovic's method by incorporating a procedure wherein step (2) comprises the step of transmitting the test packets using a packet priority level lower than a packet priority used to transmit data packets in step (3). The motivation for changing the priority level of the test packets to a lower priority is to minimize disruption of user data packets transmitted at a higher priority as suggested by Tezuka in Paragraphs 19 and 20.

2. Regarding **claim 18**, the combination of Du, Komatsu, and Vukovic discloses a method, wherein step (2) comprises the step of transmitting test packets at a data rate sufficient to support a desired bandwidth in step (3). **(See Du's Page 258. Section 2, 1st Column, 1st paragraph and 2nd Column, Lines 1-7.)**

(VI) Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du in view of Vukovic and Tezuka.

1. Regarding **claim 19**, Du discloses a computer having a network interface **(See**

Figure 1) and programmed with computer-executable instructions that when executed perform the steps of: (1) transmitting a plurality of test packets over the network during a plurality of different time slots;**(See Page 258, Section 2, 1st Column, 1st paragraph and 2nd Column, Lines 1-7. Please also note that in Du's testing arrangement according to the terminology shown in Figure 2, Du refers to testing packets as probe packets and to time slots as Communication Interval (I). Further Du shows the testing is done over a plurality of time slots (i.e. Communication Interval, I,) as further evidenced in Figure 4. See also page 259 2nd Column Lines 8-10 and 13-19)** (2) on the basis of step (1), evaluating which of the plurality of different time slots corresponds to favorable network traffic conditions; **(In Figure 6 Du shows all probability of congestion detection is done per time slot (i.e. communication Interval, I) indicating favorable time slot. Further Figures 4 and 7 show test packets are sent per time slot (i.e. communication interval, I) and the evaluation is done per time slot.)**

Du, however fails to disclose the third step of transmitting data packets over the network using one or more favorable time slots evaluated in step (2).

Vukovic discloses the third step of transmitting data packets over the network using one or more favorable time slots evaluated in step (2). **(See Figure 10, step 421 and Paragraph 51 and 10. See also Figures 13 and 14)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Du's apparatus by incorporating the third step of transmitting data packets over the network using one or more favorable time slots

evaluated in step (2). The motivation to choose a time slot or time position that is favorable to network traffic conditions is to minimize co-channel interference as stated in paragraph 22 by Vukovic.

Du fails to disclose that test packets have a first priority level and the data packets transmitted over the network have a second priority wherein the second priority level is higher than the first priority level.

Tezuka discloses that test packets have a first priority level and the data packets transmitted over the network have a second priority wherein the second priority level is higher than the first priority level. **(See Figure 19 and Paragraphs 159, 160, 162 and 167)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Du's apparatus by incorporating test packets having a first priority level and the data packets transmitted over the network having a second priority wherein the second priority level is higher than the first priority level. The motivation for changing the priority level of the test packets to a lower priority than the data packets in step (3), but higher than other data packets containing other data transmitted on the network is to minimize disruption of user data packets transmitted at a higher priority as suggested by Tezuka in Paragraph 160.

2. Regarding **claim 20**, Du discloses a computer, wherein the computer-executable instructions further perform the step of evaluating packet latencies with a second computer connected to the network. **(See Figure 1 and also see Page 258. Section 2, 1st Column, 1st paragraph and 2nd Column, Lines 1-7.)**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris H. To can be reached on 571 272 7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KWANG BIN YAO
SUPERVISORY PATENT EXAMINER

HM
3-30-2007